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SCHOOL HEALTH

IT is common knowledge that school children today are, on the average, bigger and heavier than were their parents ; most observers would agree that they are also healthier ; and statistics show that in three generations their chances of dying during school years have been reduced sevenfold.

It is particularly encouraging to learn that this improvement was maintained during the war.* Indeed, in some directions it was extended, since the rate of growth and the nutrition of children improved, dental caries was less, and deaths from respiratory infections were fewer. All this is a tribute to the special care given to our children in the midst of total warfare.

There is, however, another side to the picture. The nutrition of at least one in every nine of the children attending maintained schools is poor or, at the best, fair ; up to one in every ten children is educationally sub-normal ; and many children are seriously disturbed emotionally. Much is being done in schools to deal with these defects by school meals, school milk, special educational provision and the child guidance service. But by themselves these are not enough. The problem is a complex one, involving heredity, physical environment and culture. It therefore calls for joint action in the related fields of medicine and education. As Sir William Jameson says*, " The promotion of health, of whatever section of the community, must be the active concern not only of the individual himself, but especially of those who are in some position of authority over others. Of these our school teachers are the largest and most important group."

This Journal is one of the means by which the Central Council for Health Education tries to help teachers to widen their appreciation and understanding of the problems involved.

* *The Report of the Chief Medical Officer of the Ministry of Education for the years 1939/45. (H.M.S.O. 1947.)*

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THE DEVELOPMENT OF RESISTANCE TO INFECTION

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All thinking people must have wondered why it is that when infectious diseases are prevalent some get them and others do not; why some have them severely and others mildly ; why some diseases particularly attack children.

The answer is to be found in " immunity". That is the accepted term ; but is not really a good one, for it suggests complete safety from the disease under consideration. It would be better to think in terms of " resistance ", which can vary.

How then does this resistance come about? A table may be useful, both to systematise our ideas and to provide a framework for discussion.

Resistance

I. Innate			
II. Acquired	1. Active	A. Natural	a. By attack of infectious disease
			b. By subclinical infection
		B. Artificial	c. By inoculation with living virulent micro-organisms
			d. By inoculation with living related, but not dangerous, micro-organisms or of attenuated micro-organisms
			e. By inoculation with killed micro-organisms
			f. By inoculation with toxoids
	2. Passive	C. Natural	g. By placental circulation
			h. By mother's milk
		D. Artificial	i. By inoculation with antibacterial sera
			j. By inoculation with antitoxin sera

Innate Resistance

In many instances people who escape disease do so because of acquired resistance, which we shall consider later, others may escape because of better nutrition or bodily fitness ; but there remain some whose resistance cannot be explained on these grounds. We must presume that they have an innate, probably inherited, resistance. Why this should be we do not quite know ; but we do know that, in the case of animals and plants, it is possible by selective breeding to obtain strains of great resistance to certain diseases. Presumably there is some resistance factor which is inherited and presumably the same holds for man.

Acquired Resistance—Active

Active resistance is so called because in it man's body puts up its own defence. The tissue cells develop resistance to invading micro-organisms and in the blood and other body fluids are produced antibodies capable of destroying the micro-organisms or their products. Such resistance is often long-lasting and powerful. It takes, however, some time to develop.

Natural, by attack of infectious disease

That " you can't have measles twice " is one of those almost truths known to everyone. Certainly second attacks of measles are extremely rare. The same holds for many other diseases, among them diphtheria, whooping cough, mumps and chicken pox. Others, however, the common cold and pneumonia being good examples, give little, if any, protection against further attacks.

In an infectious disease the invading micro-organisms multiply in the body, produce poisonous products, and hence cause the signs and symptoms of illness. But the body takes its counter measures. Its cells develop resistance and antibodies are produced. That is how we recover. Often, moreover, this resistance remains, sometimes for years, sometimes for life. This is natural resistance produced by an attack of infectious disease.

Natural, by subclinical infection

" Adults rarely get measles ". A simple explanation of this would be that they had the disease as children. Yet many adults have never had recognisable measles. So it is with other common infectious diseases of children.

Infection does not need to produce recognisable physical signs and symptoms in order to bring about resistance. The illness may be so slight that no doctor could diagnose it. Often there are no signs of illness at all. Such infection is known as " subclinical".

Evidence that there has been infection and that resistance has been produced can be obtained by demonstrating the presence of antibodies. One example of how this can be done is to be found in the familiar Schick test for resistance to diphtheria. In this a small, harmless amount of diphtheria exotoxin (the poison produced by the diphtheria bacillus) is injected into the skin. If the person tested has had clinical or subclinical diphtheria, antibodies (in this case antitoxins) will have been produced in his body. They will neutralise the injected exotoxin and no reaction will be observed. This is called a negative Schick reaction. On the other hand a person who has not had clinical or subclinical diphtheria will have no antitoxin. There will be nothing to neutralise the injected

exotoxin and, after a short time, redness and swelling will be visible at the site of injection. This is called a positive Schick reaction.

Interesting results have been obtained by applying the Schick test to different age groups. At six months of age half of the infants tested proved insusceptible to diphtheria. (This is due to passive resistance transferred from the mother, which will be discussed later.) Between eight months and three years only 12 per cent are insusceptible. The percentage of insusceptibles increases with age, being 50 per cent at six years, 73 per cent at twelve, 88 per cent between twenty and thirty and 95 per cent at sixty.

Artificial, by inoculation with living virulent micro-organisms

Man has long tried to imitate nature in producing resistance to infection. The first records we have are of a method used by the Chinese. They took crusts from smallpox pustules, dried them and applied them to the nostrils of people they wished to protect. A somewhat similar method was introduced into this country from Turkey in 1717 by Lady Mary Wortley Montagu, wife of the British Ambassador.

These methods involved the introduction into the body of the living micro-organisms in a virulent form. The object was to produce a mild attack of the disease. Not infrequently, however, the person inoculated contracted the disease in a severe form. Obviously such methods are dangerous. Inoculation with living virulent micro-organisms is not now practised.

Artificial, by inoculation with living, related, but not dangerous micro-organisms or of living, attenuated, micro-organisms

This method originates from the historic observation of Jenner (1798) that people who, by milking cows suffering from cow-pox, acquired that disease, became resistant to smallpox. The reason for this is that the virus of cow-pox is closely related to and stimulates resistance against the virus of smallpox, but is not dangerous to man. Jenner took material from cow-pox pustules. This he called " vaccine lymph ", from the Latin " vacca " a cow. By inoculating the vaccine lymph into man he provided protection against smallpox. With modifications Jenner's method is that in use to-day.

Examples of the use of a living, attenuated, micro-organism are to be found in one method of inoculating against plague and in the much discussed, and in some countries widely used, B.C.G. (Bacillus Calmette-Guérin) vaccine against tuberculosis.

Artificial, by inoculation with killed micro-organisms

The dangers attendant on the inoculation into the body of living micro-organisms led investigators to try whether resistance might not be

brought about by inoculation with killed micro-organisms. In many cases it can.

Chemical complexes, known as antigens, are present in living micro-organisms. It is these antigens which, when the micro-organisms enter the human body, stimulate the production of antibodies. It is possible to kill many micro-organisms without destroying their antigens. Hence it is possible to produce resistance against certain diseases by the inoculation of killed micro-organisms. Products of this type are known as killed vaccines and among the diseases against which they are used are typhoid, cholera, plague and typhus.

Artificial, by inoculation with toxoids

Some dangerous micro-organisms, the diphtheria bacillus and the tetanus bacillus being good examples, produce a poison called an exotoxin. In diseases caused by these micro-organisms it is the exotoxin which is responsible for the signs and symptoms of illness. The human body's defence is to form an antitoxin.

At first sight it would seem reasonable to try artificially to stimulate the body to produce antitoxin by the inoculation of exotoxin ; but exotoxin, like living virulent micro-organisms, is too dangerous to use. Fortunately, by treating exotoxin with formalin and by other means, it is possible to convert exotoxin into toxoid. This is no longer dangerous, but retains the property of stimulating the production of antitoxin.

It is toxoid, in some form or other, which is used to give protection against diphtheria and it is toxoid which is used to protect our Forces against tetanus, as a result of which in the last war tetanus became a very rare disease, whereas formerly it had been one of the most dreaded complications of wounds.

Acquired Resistance—Passive

In contrast to *active* resistance is *passive* resistance in which the antibodies are produced in some other person or in an animal and transferred to the person being protected.

Just as we have naturally and artificially produced active resistance, so we have naturally and artificially produced passive resistance.

Natural, by placental circulation

Before birth the baby's blood system is connected with its mother's through the placenta. Antibodies in the mother's blood will pass to the baby. This is the explanation of the relative insusceptibility of young babies to many infectious diseases. The example of diphtheria has already been given.

Natural, by mother's milk

Antibodies are present in the mother's milk and, in greater amounts,

In the colostrum which comes before the milk. In the human, however, this source of antibodies is not so important as it is in some other animals.

Artificial, by inoculation with antibacterial serum

If an animal, generally a horse, is inoculated with some types of micro-organisms it will produce in its blood antibodies capable of destroying these micro-organisms. When the antibodies are present in sufficient quantity the horse can be bled and the clear serum, containing the antibodies, separated from the blood. This can be injected into human beings to treat diseases caused by the micro-organisms with which the horse was inoculated. This method was formerly used in the treatment of pneumonia and meningitis, among other diseases. It was never very successful and has been replaced by the more effective sulpha drugs and penicillin.

Artificial, by inoculation with antitoxic sera

In the method previously described the horse was inoculated with micro-organisms. This resulted in the production of antibodies against these micro-organisms. Similarly if a horse is inoculated with an exotoxin or its toxoid, the result will be the production of antibodies against that exotoxin. Antitoxin serums from the horse are, after refinement, used in the treatment of certain diseases, notably diphtheria and tetanus. They are used for treatment because when a person is already ill it is important immediately to counteract the exotoxin present in his body with ready made antitoxin.

Antitoxin prepared in another animal is, however, rapidly eliminated from the human body. Hence antitoxic serums have little place in the prevention, as opposed to the treatment, of disease. Their limited use is to give immediate protection, say to children in a household where there is a patient with diphtheria, or to soldiers who have received severe dirty wounds and are in danger of getting tetanus. Even in these instances it is advisable to combine this passive, immediate, but short lived, protection with active long lasting protection by injecting toxoid at the same time as the antitoxic serum.

Conclusion

These are some of the ways in which resistance to infection may be acquired.

Equally important are the well known principles for the preservation of good health—adequate food (including the necessary vitamins and other protective substances), avoidance of excess, balanced exercise and rest, good housing, freedom from damp, freedom from cold.

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THE AIMS AND METHODS OF CHILD GUIDANCE

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The fundamental object of Child Guidance is the promotion of mental health and the prevention of mental disorder both in childhood and in later adult life. The aim is to alter the environmental forces which mould the child's personality in such a way that mental health is achieved in childhood, and also, by the early treatment of psychological disorders when they have occurred in the child, to ensure that the subsequent mental development and psychological state of the adult will be a more healthy one.

The psychological development of the child is dependent both on constitutional inherited factors and upon the stresses and strains and constructive forces in his environment. Apart from certain rare pathological cases, it is to the environmental forces that we must look as the limiting factors governing the personality development of the child, and it is these factors alone which are amenable to our interference and alteration.

The most important of these factors in the life of the infant and small child is the attitude and behaviour of his mother and the members of his family. The emotional bond between mother and child is established in his earliest months, and is the first channel through which the child achieves emotional contact with the outside world. His relationship with his mother is the first and key emotional relationship of his life and sets the pattern for his future relationships with people, which we nowadays recognise as being one of the most important features of mental life.

The behaviour of the mother to her child is important: firstly in regard to the quality of the love which she gives him which promotes in him a greater or lesser degree of feeling of social security, and secondly in regard to the way in which she deals with the growth and manifestations of his primitive instinctual impulses. The child is born with two main sets of drives—the aggressive and the sexual—both of which develop during his first few years. Though both have a social goal, neither, in their original forms, are socially acceptable. It is the energy associated with these primitive impulses which is utilised in the development of the personality, and the actual structure of the personality depends in large measure on the detailed way in which these impulses are organised and shaped to conform to social demands.

The mother's attitude to her child is dependent partly on her emotional make-up and partly upon her intellectual ideas with regard to the management and upbringing of children. A mother's emotional make-up is

itself dependent to a very high degree on her own childhood experiences, which affect all her behaviour and especially the quality of her relationship to husband and children. Her intellectual ideas are derived mainly from the customs obtaining in her cultural surroundings, but are influenced by the teaching and propaganda of such people as doctors, midwives, health visitors, welfare workers, etc. It is unfortunately true that a healthy, happy mother, who will naturally have a fundamentally good attitude towards her child, would, if left to her own resources, probably make fewer important mistakes in her handling of him than if she has been subjected to the kind of teaching and propaganda which has been so common in this country in the last few years. Apart from the superstitious old wives' tales which have always been with us, we have for many years been suffering because of the very rigid formulations on child care which were developed as a result of the materialistic conceptions and associationist psychology of the late nineteenth century and the more recent discoveries of the importance of scientific infant feeding, and of cleanliness in relation to infection.

Prophylaxis in the First Years

It is the task of Child Guidance to attempt to emancipate mothers from the shackles of harmful propaganda on methods of management of the child's instinctual demands, and instead to give them more correct information with regard to the meaning of the different phases of infantile development and the best role that they can play in helping the child to adapt himself as well as possible to society's demands. Such work begins before the birth of the child and, though at present on only a very small scale, is carried out mainly through discussions with mothers in antenatal clinics and in the maternity and child welfare departments of local authorities. The mothers are seen either individually by child psychiatrists or psychiatric social workers, who advise them on their specific problems or deal with their individual anxieties, or else in groups of six to twelve. In these groups mothers are able to discuss their experiences of their own children and to compare divergent views on child upbringing and development. With the help of the psychiatrist or psychiatric social worker they are often able, in the group atmosphere, to obtain effective help with both their intellectual and their emotional problems. These sessions are fundamentally prophylactic and are primarily intended as a means both of preventing problems arising and of dealing with minor problems or situations before they have snowballed and become difficult to deal with. There is little doubt that guidance to mothers at this stage in the child's development is a very potent and economical method of preventing future psychological disorder.

Psychiatric units in the out-patient departments of children's hospitals

are the next link in the chain. Here mothers customarily bring their infants for feeding problems and for advice on difficulties of early management. In appropriate cases the paediatrician can refer them to the psychiatrist who may be able, by a few talks with the mother, to deal with her emotional difficulties and put her on the right track with regard to future management.

General practitioners, district nurses, health visitors, children's nurses, welfare workers and many other specialised workers all have contact with the mother in the early stages of the child's life and can influence her very strongly with regard to her attitude to her child. An integral part of Child Guidance is the dissemination of information to these people in order to teach them the best approach to the mother and the type of advice and help to give. The Child Guidance team must, therefore, be closely integrated with all community services for children.

By the time he reaches the toddler stage, the general emotional atmosphere of the family and the relationships of its different members to each other and to him begin to have an important effect on the child's psychological development. In the future it may be possible at family centres such as the Peckham Health Centre to influence these factors directly, but at present they can only be dealt with indirectly through contacts with the mother or via those health workers who go into the home.

Although the main structure of the child's personality has been laid down by the time he is old enough to go outside the home circle there is little doubt of the importance to him of an understanding attitude on the part of teachers in nursery schools and infant departments. The management of the child in these spheres, and later on in his school life generally, is primarily the responsibility of educationalists. These now recognise their need for a knowledge of the emotional problems of the developing child, and lectures and discussion groups by Child Guidance workers are useful to them in this connection.

Educational Problems

In his subsequent school life, the child may easily be disturbed if his individual psychological requirements and capabilities do not fit in with the level or type of teaching in his particular class. The educational psychologist, who is an important member of the Child Guidance team, is employed in many localities in travelling round from school to school and carrying out intelligence tests on any pupil who is felt by his teacher to be in special difficulty with regard to learning or adapting himself to school activities. It may be that she will find that the child's native intelligence is too low for his particular class, which might not perhaps have been obvious because of a verbal facility, or, as quite often happens, the child may be found to have an intelligence which is considerably higher

than the average level in his class, so that he becomes bored and inattentive and therefore fails to learn. Teachers can play an important role in Child Guidance, not only because they can detect early signs of intellectual difficulty, but also because from their intimate knowledge of the children they may be able to detect those who are showing early signs of emotional difficulty. The detection of the latter is not an unskilled task, and lectures to the teachers both during their training and afterwards by members of the Child Guidance staff keep them alive to the practical issues involved.

Work in the Clinic

The Child Guidance Clinic must now be considered. It is the place to which teachers can refer children whom they suspect of emotional difficulties, and its services are also enlisted when the child develops psychological symptoms which are recognised either by its parents or by doctors. Where the difficulties have led to anti-social acts and the child has appeared before the Courts, the magistrate or probation officer will often arrange for the child to be examined. Mention has already been made of some of the different members of the staff of the Child Guidance Clinic and the value of a team approach in any particular case is now widely accepted. Whatever the symptom or overt cause for a child's referral, whether it be some behaviour disorder such as disobedience, or some neurotic manifestation such as hysterical vomiting or obsessive compulsive acts, or whether it be delinquency such as stealing, truanting or sexual misdemeanours, an attempt is made at the Child Guidance Clinic to investigate as thoroughly as possible the whole field in which the child has developed and lives. Each member of the Child Guidance team has been specially trained to cover a particular part of this field.

When the child comes to the Clinic, together with his parents, the usual procedure is for the parents to be seen, either alone or together, by the psychiatric social worker, who takes a detailed history not only of the development of the child but also of the family background and the social, economic and emotional circumstances of the home conditions. While this is going on the child is being seen by the educational psychologist, who carries out intelligence tests, both verbal and practical, in order to assess his level of innate intelligence and his educational progress, with particular reference to the presence of any discrepancy between the two. At this interview a preliminary assessment of the child's personality is also made. The child is then seen by the psychiatrist, who is specially interested in his emotional problems and in the nature of his present psychological state. The psychiatrist, except in the case of older children, uses the technique of play therapy in his interview, i.e., he allows the child to play quite freely with toys or plasticine, or sand and water, or paints. From the child's actions and running commentary the nature

of the unconscious fantasies and problems in his mind can often be clearly discerned. The psychiatrist then sees the mother, and if possible the father, both separately and together. He is, by this time, in possession of the reports of the psychiatric social worker and the educational psychologist, and is able to formulate in his own mind some tentative conclusions with regard to the nature of the condition in the child and the forces which have produced it. In his interview with the parents he is able to enquire more closely into those parts of the child's history which he feels to have been emotionally significant, and he is able further to investigate the emotional relationships between the parents, and between the various members of the family and the child. He is also able to investigate the origins of any peculiarities which he may find in the parents' emotional relationships with the child, in the life history of the parents themselves and especially in their childhood experiences.

In addition to the information which is obtained at the Clinic, the educational psychologist may visit the child's school and discuss his problems with his teachers and headmaster, and the psychiatric social worker may visit the home to investigate the living conditions and the emotional relationships of the family on the spot. Reports may also be available from the Courts, probation officers, children's hospitals, etc., all of which can be considered together with the reports of the members of the Child Guidance team when they meet to discuss the case in conference.

At a case conference (at which neither child nor parents appear) the case is presented by the workers concerned and is discussed exhaustively and in detail by all those present. An attempt is made to define the nature of the child's present condition, and to decide upon the events and the forces both inside the child and in his home and school environment which have been responsible for the trouble. For instance, they will have to determine whether the difficulties of the child have been caused in the main by a disorder of the parent-child relationship, or whether they are based upon constitutional, perhaps organic, factors in the child, or on other difficulties. The workers will also have to assess whether the child's emotional problems have become psychically internalised and so have come to have an independent existence apart from his surroundings, or whether the symptoms are a direct result of present-day environmental stress and would consequently be very much improved by direct modification of the child's surroundings and the forces which impinge upon him.

What help can be given?

The next step for the conference is to consider the different possibilities for the disposal of the case. The principal alternatives are: (*a*) alterations in the child's living conditions in the home. (*b*) advice to the parents

with regard to alterations in their management of the child; (advice on an intellectual plane is only of value where the problem is superficial). (*c*) a combination of psychotherapy for the child by the psychiatrist or child psychotherapist, and at the same time therapeutic discussions between the parents and the psychiatric social worker. This is the principal treatment procedure at most Child Guidance Clinics and will be discussed more fully in the next paragraph. (*d*) where it is felt that the home environment is inimical to the child's welfare, and where it seems that all efforts to remedy it are doomed to failure, the child may be removed from home and sent to an institution designed for the treatment of emotionally maladjusted children (either a hostel or a boarding school), or he may be sent to a suitable and very carefully chosen foster home. (*e*) other educational measures include suggestions regarding alterations in treatment at school, e.g., transfer to another class or change of school. (*f*) remedial teaching, which is carried out by the educational psychologist, and aims at filling in gaps which have been discovered in the child's basic knowledge of certain school subjects such as reading or arithmetic. These gaps have been produced by emotional upheavals or absence from school or change of school at crucial points in the child's scholastic career, and cannot usually be either detected or dealt with by ordinary non-psychological methods. (*g*) vocational guidance. (*h*) where organic illness is suspected, the child is referred for examination by the Clinic paediatrician or for investigation at a special hospital. For example, a neurological examination with *x*-rays and electrical tests of the brain may be ordered where there is suspicion that a child's illness is caused by epilepsy or some brain disease. Wherever such organic illness is found the child is of course referred for treatment through routine medical channels.

Psychotherapy

The psychological treatment of children in the Clinics is a highly skilled procedure and is carried out by psychiatrists who have had special training in this sphere or by non-medical psychotherapists who have undergone a similar type of training. Nowadays this training is usually along psycho-analytic lines. The principles of psycho-analysis are used technically in this treatment, and the unconscious mechanisms in the child's mind are brought to the surface by allowing him to project them on to suitably chosen play or art material, the meaning of the fantasies represented being then interpreted to the child by the therapist. This allows the child to become conscious of his deeper emotional problems, and, in the treatment situation and through his emotional relationship with the therapist, to develop more effective methods of dealing with them.

Psychotherapy of this sort is not a panacea for all ills ; it can only be

satisfactorily undertaken in carefully selected cases, and it is usually a process which takes very many months. In most Clinics the child attends once or twice a week for a period of about an hour and, especially in children below the age of adolescence, the mother attends at the same time. She is interviewed by the psychiatric social worker who discusses in detail with her the nature of the child's problems and of her own emotional relationship to the child, and, wherever necessary, helps her to alter her emotional attitude and her overt behaviour. This sympathetic and therapeutic approach to the mother is of the greatest importance. Too often anxious mothers are either told to stop worrying or else blamed for their behaviour. Such treatment, by not dealing with the mother's personal problems, often makes the matter worse rather than better.

Staffing

It is estimated* that not less than 1% of children require Child Guidance treatment each year and that another 1% require advice from an educational psychologist. In a community of about 120,000 people which contains about 30,000 under 17, we may expect some 600 children to be in need of help each year. To meet this need the services of a considerable staff are required. The National Association for Mental Health have recommended a team of not less than one child psychiatrist, one child psychotherapist, two educational psychologists and two psychiatric social workers. If really good preventive work is to be undertaken (and without this we shall continue to be swamped by emotionally sick children), this team will need to be increased. There is, however, at present a famine in trained staff which is likely to continue for some years, and it will be impossible for all authorities to obtain even the minimum necessary.

Training

An important function which is fulfilled by many of the larger Child Guidance Clinics is that of the training of personnel in the different branches of the work. It is becoming increasingly recognised that a personal analysis is an invaluable part of this training in order that the Child Guidance workers may be influenced as little as possible by their own emotional problems in dealing with the cases both at the Clinic and outside. Too often those without this experience side strongly with either parent or child and so are unable to help the two sides to a mutual adjustment. All the 'students' at the Clinic are people who have had considerable previous experience in their own field prior to undertaking the specialised training in Child Guidance. Psychologists have already obtained an Honours degree in their subject and have mostly had considerable teaching experience; psychiatric social workers have a Social

* C. P. Blacker: *Neurosis and the Mental Health Services.*

Science Diploma, are carefully selected as regards their personality and have had long experience in various forms of social case work ; psychiatrists have, in addition to their general medical training and experience, specialised experience in dealing on the one hand with sick children and on the other with adult psychiatric patients in mental hospitals, outpatient clinics and neurosis centres. Many have also had some previous training in psychotherapeutic procedures. The demand for trained Child Guidance staff at present far exceeds the supply. This is due to the very rapid expansion of the Child Guidance movement following the passing of the Education Act of 1944, which puts an obligation upon all local authorities to provide Child Guidance facilities in their areas. There is therefore considerable pressure upon Clinics to train as many workers as possible.

Research

The above short outline of Child Guidance practice indicates that a very wide field is covered and that many problems of great complexity are dealt with. We are a long way from being able, at the present time, to solve many of the most fundamental of these problems. One of the important functions of a properly run Child Guidance Clinic, therefore, is to carry out scientifically valid research into the various branches of the subject. We may hope that in due course this will help us in the earlier detection of childhood psychological disorders and above all in their prevention.

Experiments with different forms of psychological treatment are being carried out, for example the treatment of children in groups, either along the lines of orthodox individual play therapy or in specially organised psychiatric social clubs. These may lead to the evolution of more rapid and more effective therapies.

Special teams of research workers are being set up for the investigation of specific problems, for instance, the effect on the young child's personality of separation from the mother due to evacuation or illness ; the effect on the child of mental disorder in the mother ; the association of different types of family structure with different psychological abnormalities in the child, etc. These teams will be based on Child Guidance Clinics, but may do most of their work either in the wider community or in special institutions for children such as hospitals or hostels. It is increasingly realised that in order to be of real value the research projects must be extremely well conceived and carefully worked out and the research teams must be adequately staffed. This work is costly and up to now has been hampered by lack of funds. There are welcome indications that money is at last being made available and this may eventually lead to great advances in the whole field of Child Guidance.

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RUBELLA IN PREGNANCY

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Normally German measles (rubella) is the most trivial of all the infectious diseases. Until recently it could be dismissed as something which was followed by no complications and which had no real importance. It was therefore most disturbing to find that in Australia during the period 1937-1942 many hundred babies were born with irremediable physical defects directly due to infection with the virus of rubella.

In 1940 Gregg of Sydney observed an unusual frequency of cases of congenital cataract (opacity of the lens of the eye) in infants. His enquiries brought to light that in each instance the mother had suffered from German measles during the early months of her pregnancy. Soon afterwards it was observed that deaf-mutism might also result from the same cause. Detailed investigations have shown that at least in Australia during this period, an attack of rubella in the first three months of pregnancy had more than a 50 per cent chance of producing serious damage in the embryo. In many ways this is one of the most important contributions to epidemiology and preventive medicine ever made from Australia.

For obvious reasons most of the investigations of the condition have been retrospective. An infant has been found with such and such an abnormality and enquiry has shown that its mother had a definite or a probable attack of German measles early in her pregnancy. In only a few instances has it been possible to diagnose an attack of rubella in a pregnant woman and subsequently assess what damage if any was received by the foetus.

This means that there are several important gaps in our knowledge which will need to be filled before the full implications of rubella in pregnancy can be assessed. We do not know in what proportion of cases an attack of the disease in the second or third month of pregnancy is *not* followed by damage to the infant. From the Australian figures it looks as if nearly every instance of infection in the second month and about half the infections in the first and third months are followed by serious manifestations in the child. Infection after the fourth month appears to be harmless. These conclusions however may represent too pessimistic a view. In addition they may hold only for the particular type of German measles that was prevalent in Australia from 1937 to 1942. There is no doubt that similar cases have occurred in England and America but it is still to be worked out whether or not different

epidemics give significantly different proportions of damage to the embryo.

Preventive Measures

What can be done to prevent these catastrophes? It is obvious that any woman during the 'vulnerable' early months of pregnancy should avoid any contact with cases of rubella but that is not a very practical piece of advice. In most people rubella is so mild that they do not go to bed and may be quite unaware that they are infected. Where it is known that a susceptible woman has been in contact say with a member of her family with rubella, then it is reasonable to try to protect her with an injection of immune serum from another person recently convalescent from the disease.

In Melbourne we have recently collected a large supply of serum from a rubella epidemic in a naval training depot. More than fifty healthy young adult convalescents donated a pint of blood each and from this, concentrated antibody (the gammaglobulin fraction) has been prepared. It remains to be seen how often the opportunity will arise for its effective use and how effective it will be in preventing infection.

The final problem is the most difficult of all. What should be done when a woman in the first three months of pregnancy suffers a definite attack? In Australia the majority of doctors seem to favour the induction of abortion. The handicap of congenital blindness or deaf-mutism is such that in their view, it is justifiable both from the point of view of the child and of the family concerned. If such a point of view is going to be adopted it becomes of great importance to be able to diagnose an attack of rubella with real certainty. Some diagnostic test, a complement fixation test, for example, would be of the greatest value in allowing the doctor to feel reasonably certain that the induction of abortion is really necessary.

Need for Research

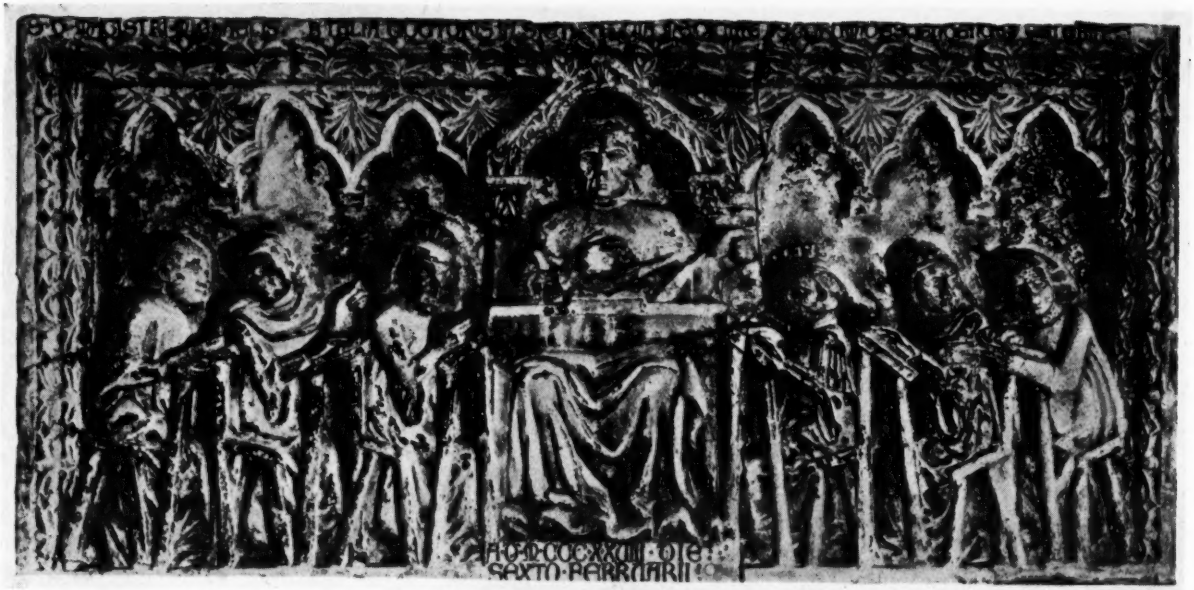
Rubella must now be regarded as an important disease on which research is badly needed. So far the virus has never been transmitted with certainty to any experimental animal or cultured by any technique. Investigation with 'human guinea-pigs' may be necessary before we are in a position to do anything really helpful against a common catastrophe that can bring as much lasting unhappiness as any other disease.

BIOGRAPHICAL NOTE

F. M. BURNET, M.D., F.R.S.—Graduated at Melbourne University 1922 and has been on the staff of The Walter and Eliza Hall Institute of Medical Research, Melbourne from 1923, with breaks at the Lister Institute, 1926-27 and at the National Institute of Medical Research, Hampstead 1932-33. Director of the Hall Institute from 1944. Chief interests have been immunology and work on viruses.

Food Advice Bureau at the Obstetric Unit, University College Hospital, London.

(*See article on page 71*)



The teaching of medicine at Bologna at the beginning of the 14th Century (from the Sarcophagus of Michael of Bertalia, who died in 1328. Bologna, Museo Civico).

Hlth. Educ. J., 1948, 6, 65—66

MILESTONES IN MEDICINE
2. GALEN AND THE MEDIAEVAL WORLD

By E. Ashworth Underwood, M.A., B.Sc., M.D., D.P.H., F.L.S., *Director of the Wellcome Historical Medical Museum ; Hon. Lecturer, University of London.*

To the educated world of today Galen is but a name, yet he dominated medical science and practice for fifteen hundred years. As his authority was sufficient to stultify any advances which might otherwise have been made, it is worth while to examine his influence and the doctrines on which it depended.

Born at Pergamum in Asia Minor in 130 A.D., Galen had travelled extensively and was a well-known author before he was thirty. He had experience as a surgeon to the gladiators and he soon became a fashionable practitioner at Rome, and physician to the Emperor Marcus Aurelius. Thereafter Galen combined a busy professional life with scientific investigation and the writing of numerous books. He died in 200 A.D.

Galen's work in medicine may be divided roughly into clinical, anatomical and physiological sections. As a clinician he must have been highly successful. His writings show his wide knowledge of the medical literature of his day, and in his descriptions of his own cases he is efficient and dogmatic. As an anatomist he was handicapped by the fact that the human body was not dissected at that time, and his knowledge is therefore derived from animals—especially the pig and the Barbary ape. His account of the bones is thorough, and he had a sound knowledge of the joints and their functions. His work on the muscles was especially important.

Galen is certainly best known because of his physiological writings. He carried out important work on the effects of section of the spinal cord at different levels. His general view of the economy of the body was based on that of Hippocrates—the same four elements and qualities, and the sanguine, phlegmetic*, choleric and melancholy temperaments. But in describing the process of nutrition of the tissues Galen was obsessed by the three types of ' spirits ' in the body—the natural, vital and animal spirits. With these went three divisions of the blood, which intercommunicated at three levels. He was also obsessed by the imagined presence of minute pores connecting the two sides of the heart. Had

* *The word "bilious" was erroneously inserted for "phlegmetic" in the previous article* (*Hlth. Educ. J., 1948,* **6**, 7-8).

it not been for this gross error, there is a possibility that he would have recognised that the blood circulates round the body, and does not merely flow to-and-fro in the vessels.

From the aspect of future ages Galen was much too dogmatic and authoritative. For centuries all medical teaching was simply an examination of what he had said, and a few contemporary illustrations show his words being read to or by students at their dissections and in their clinical studies. His influence died hard, and it was not until the eighteenth century that it was completely eliminated.

BIOGRAPHICAL NOTES

D. P. CUTHBERTSON, M.D., D.Sc.—Director of the Rowett Research Institute in succession to Sir John Boyd Orr. Consultant Director Commonwealth Bureau of Animal Nutrition. Hon. Consultant in Physiology and Nutrition to the Army. Chairman Editorial Board *Nutrition Abstracts and Reviews.* Formerly Grieve Lecturer in Physiological Chemistry, the University of Glasgow. From 1943–1945 seconded to Administrative Staff Medical Research Council.

Professor W. C. W. NIXON, M.D., F.R.C.S., F.R.C.O.G.—Director, Obstetrical Unit, University College Hospital, London. Received his medical education at St. Mary's Hospital, London. From 1935-38, Professor of Obstetrics at Hong Kong University. During the war was attached to the University of Istanbul, where he taught obstetrics. In the Far East he became particularly interested in nutritional diseases.

E. ASHWORTH UNDERWOOD, M.A., B.Sc., M.D., D.P.H., F.L.S. Chevalier of the Legion of Honour.—Director of the Wellcome Historical Medical Museum. Honorary Lecturer in the History of Science, University College, London. Member of the Board of Studies (History and Philosophy of Science) and Examiner, University of London. Honorary Secretary of the Section of the History of Medicine, Royal Society of Medicine. Thomas Vicary Lecturer, Royal College of Surgeons of England, 1946. Fielding H. Garrison Lecturer, American Association for the History of Medicine, and Guest Lecturer, Section of the History of Medicine, Centenary Meeting of the American Medical Association, 1947. Formerly Medical Officer of Health of the County Borough of West Ham, etc. Author of *'A Manual of Tuberculosis, Clinical and Administrative,'* and numerous papers on historical and epidemiological subjects.

STEWART SWIFT, M.B.E., Chief Sanitary Inspector, City of Oxford.—Chairman of the Sanitary Inspectors' Association and Honorary Editor of the Association's Official Journal, *The Sanitarian.* Author of Butterworth's Sanitary Officers' Library, including *Sanitary Administration* (*Second Edition*), *Food and Drugs Administration*, and *Housing Administration* (*Third Edition*). Fellow of the Sanitary Inspectors' Association. Fellow of the Royal Sanitary Institute.

C. P. BEATTIE, M.A., M.B., Ch.B., D.P.H.(Ed.).—Professor of Bacteriology, University of Sheffield. Formerly Professor of Bacteriology and Director of the Government Bacteriology Laboratory, Baghdad, and before that Lecturer in Bacteriology in the University of Edinburgh.

Hlth. Educ. J., 1948, 6, 67—70

THE INTER-RELATIONSHIP OF SOME BRANCHES OF HEALTH EDUCATION

By Philip Bogod, *Head of a School for Educationally Sub-normal Children.*

To the general public, health education usually means those lessons given in schools or clinics under the vague title of " health talk " or " hygiene ". The health educationist, however, divides his subject under such different heads as: education in good habit formation, physical education, education for family life, mothercraft teaching, sex education, education for married life, education against infectious diseases and technical instruction in physiology and psychology. These branches of health education, however, cannot really be treated as distinct and separate entities: they are so closely inter-related that it is impossible to educate in one without introducing some part of others.

In this article I propose to consider this inter-relationship under some of the above heads.

Education for Good Habit Formation

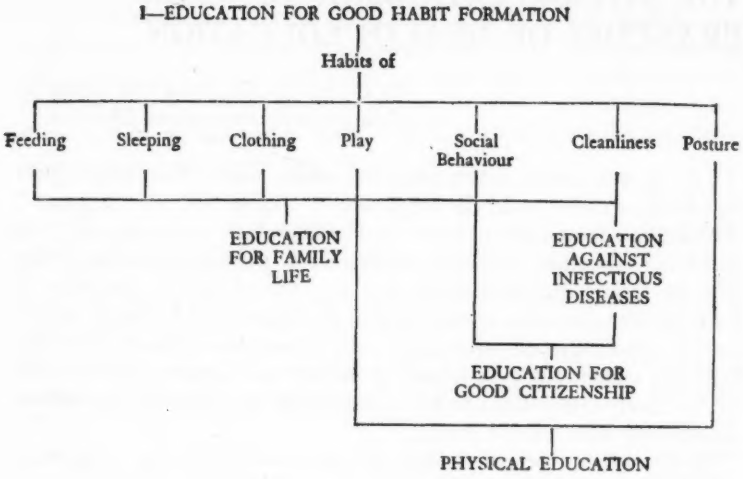
This branch of health education is put first because it begins in the earliest years of life. Those parents who are educating a child in cleanliness—habituating it to soap and water, to using a handkerchief when coughing or sneezing, and to washing the hands after excretion—are not only educating it in good habit formation but are giving direct education against the spread of infection. The teaching goes even beyond this branch of health education: it is fitting the child for its place in a family similarly educated and so is part of education for family life. Further, since infection may spread disease among the community, education against such diseases contributes to education for good citizenship.

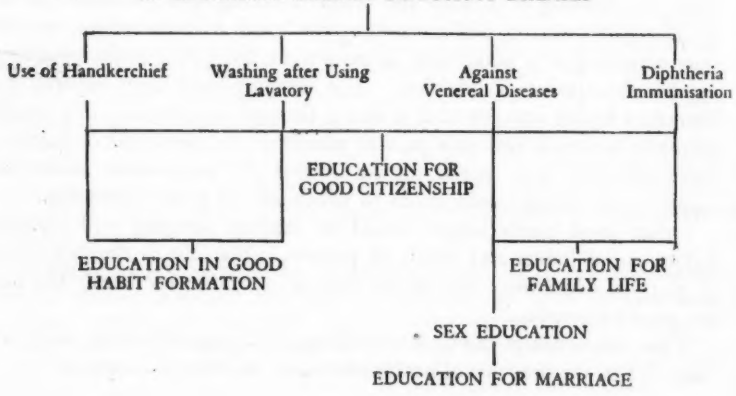
Other good habits taught would be feeding, sleeping and clothing habits, social habits and habits of posture. The last is the beginning of physical education; and all are part of education for family life and for good citizenship.

These relationships can be seen in Diagram I (page 68) where, as on all other charts, the branches of health education are shown in capitals.

Education against Infectious Diseases

This branch of health education is of particular interest here because it reverses the relationships so far considered.


I—EDUCATION FOR GOOD HABIT FORMATION
Habits of
Feeding
Sleeping
Clothing
Play
Social Behaviour
Cleanliness
Posture
EDUCATION FOR FAMILY LIFE
EDUCATION AGAINST INFECTIOUS DISEASES
EDUCATION FOR GOOD CITIZENSHIP
PHYSICAL EDUCATION


II—EDUCATION AGAINST INFECTIOUS DISEASES
Use of Handkerchief
Washing after Using Lavatory
Against Venereal Diseases
Diphtheria Immunisation
EDUCATION FOR GOOD CITIZENSHIP
EDUCATION IN GOOD HABIT FORMATION
EDUCATION FOR FAMILY LIFE
SEX EDUCATION
EDUCATION FOR MARRIAGE

We have several popular examples. First, the posters reminding us that " coughs and sneezes spread diseases " are attempting to educate us in the good habit of using a handkerchief to " trap the germs " and so prevent the infection of our fellow-men. Here—although only by propaganda measures—we enter into the departments of education in good habit formation and good citizenship.

Secondly, we have the campaign against venereal diseases. This not only warns the public against the dangers of these diseases, but also describes how they are acquired and so is part of sex education. It also stresses the dangers to husband or wife and children, and is therefore education for family life and for good citizenship.

Thirdly we have the posters advocating immunisation against diphtheria. These by their exhortations to parents are therefore fostering parental care and responsibility and educating for family life.

Lastly we have the advice especially stressed to food workers to " Wash your hands after using the lavatory ". I have no doubt that the promoters of this campaign are hoping to produce a habit of cleanliness which will prevent infection through food, and so are educating in good habit formation.

Diagram II (opposite) shows the inter-relationship of educating against infection with other branches of health education.

Education for Marriage

What must the young couple bring to marriage to give it a reasonable chance of being successful?

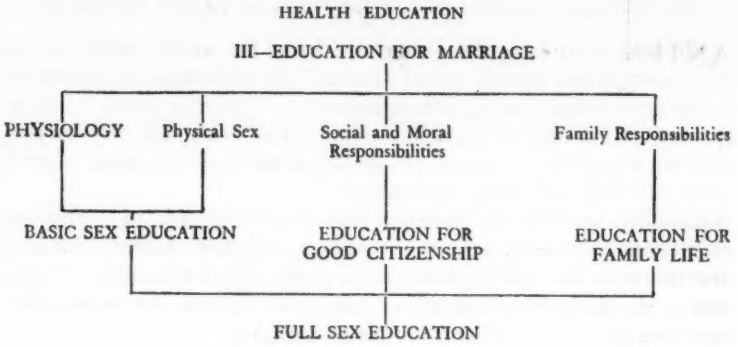
First, they will need a sufficient knowledge of human physiology and the physical side of sex as a foundation for their sex education.

Then they must have full understanding of their social responsibilities, which can be achieved only through education for good citizenship.

Finally, as an integral part of education for family life, they must have a picture of marriage as a rich human relationship, involving individual and family responsibilities.

Here we have a remarkable state of affairs: in what is considered to be one of the most important separate branches of health education we cannot, in fact, give separate teaching—we can achieve the complete maturation necessary for successful education in marriage only through its inter-relationship with other branches of health education. See diagram III (page 70).

These then are but some of the inter-relationships of the various branches of health education. Diagram IV (page 70) shows further examples but does not exhaust all the possibilities of the subject. Many more examples will immediately spring to the mind of the reader. Truly there is no entirely separate branch of health education.



BIOGRAPHICAL NOTE

PHILIP BOGOD, Diploma in Education, University of London.—Has taught in day and residential schools and has specialised in work with handicapped children. Head of a school for educationally sub-normal children.

Hlth. Educ. J., 1948, 6, 71—74

ANTENATAL CARE

By Prof. W. C. W. Nixon, M.D., F.R.C.S., F.R.C.O.G., *Director, Obstetric Hospital, University College Hospital, W.C.*1.

All will agree that the expectant mother is the most important member of the community. It is only by adequate supervision during pregnancy and labour that a reduction in maternal and infant mortality will follow, and so more and more attention is being paid all over the world to the care of pregnant women and young children.

It is not a recent idea that women should have particular care during pregnancy. As long ago as 1540 Thomas Raynald devoted a chapter in his book, *Birth of Mankind,* solely to diseases of pregnancy. Centuries later French obstetricians emphasised the importance of antenatal care. In Britain we give the credit to Dr. W. J. Ballantyne of Edinburgh for drawing attention to this aspect of public health. His paper—*A Plea for a Prematernity Hospital*—first appeared in 1901 and in 1913 he introduced home visiting and established infant and pregnancy consultation clinics. To-day one of the most popular of obstetric books (over 600 pages) is devoted entirely to antenatal and postnatal care. The author is Professor F. J. Browne of University College Hospital, London. He was a student of Dr. Ballantyne and he has dedicated his book to this pioneer.

Doctors, nurses and public health workers have thus long been convinced of the advantages of a maternity service ; but in the past the mothers have been slow in utilising it. The public have now become more educated in the importance of this subject, however, and the demand is so great that there are not enough clinics, staffed with a sufficient number of doctors and nurses, to satisfy it.

In 1945 in England and Wales there were 1,969 antenatal clinics and 574,209 women (81.5% of total registered births) attended them. These figures give an idea of the type of service that has been built up. Even this number of clinics is not sufficient, for some of them are held in make-shift buildings and with increase of populations more clinics of a modern kind need to be built.

With the passing of the Maternity and Child Welfare Act in 1918 and the creation of the Ministry of Health there began a maternity service organised on a national front. Prior to this the care of expectant mothers and young children was haphazard and left to a few individuals and voluntary bodies. But centres were now started where the health of expectant mothers could be supervised and hygiene of pregnancy could be taught. The recent war was a testing time and served to show on

what solid foundations the maternity and child welfare service has been built. It was the Government's nutrition policy—including a system of food priorities—that maintained and improved the health of mothers and children. The national Milk Scheme started in 1940 did much to ensure the success of this policy.

Aim of Antenatal Care

The aim of antenatal care should be obvious. The mother needs to be guided through her pregnancy, delivery and puerperium so that she produces a normal, vigorous baby without psychological or physical damage to herself. With successful lactation and weaning at the normal time she gives her baby the best possible start in life. It is the duty of those who are responsible for the care of expectant mothers to do all that is possible to achieve this desirable result.

The first visit to the antenatal clinic is to my mind a most important one. It is the way the mother is handled at this time that may influence her whole bearing towards the coming event. Mistakes have been made in the past of emphasising the abnormal, the pathological aspect of pregnancy. Much harm has resulted from this. Mauriceau once described pregnancy as a disease of nine months' standing. This cynicism is still to be found in some quarters. Such an attitude is to be deplored. The whole emphasis should be put on the normal and not the abnormal and in this way fear can be eliminated. Explanation is of course necessary if an abnormality develops and a special kind of treatment is desirable. Most mothers will readily accept such an eventuality and will gain confidence if an explanation is given simply and truthfully.

At the first visit the medical examination should be kept in the background and most time spent in assessing the type of mother, the home, the family, in fact, ' almonering '. A short chat by the doctor or midwife on the hygiene of pregnancy is appropriate at this time and pamphlets can be distributed.

'Pep' Talks

During the past year at University College Hospital one has been giving ' pep ' talks to the new mothers. These are held once monthly and the mothers who have booked at the clinic during the previous month are asked to attend. The talks are informal and all barriers between speaker and audience broken down. For the first three-quarters of an hour the important aspects of antenatal hygiene are explained. First, the normality of the event is underlined—the fact that pregnancy is physiological. Many women have read Dr. Dick Read's book *Revelation of Childbirth* and so at an early stage one can pass on to his " fear—tension—pain " syndrome and to his plea for natural childbirth by the practice of relaxation. Then the role that proper feeding plays in main-

taining the health of the mother and her baby is stressed. The importance of taking all food priorities, including the Ministry of Food orange juice and vitamin A and D tablets is pointed out. The value of certain vegetables, fruits, fish and so forth, is carefully explained. Minor ailments—nausea, constipation, insomnia, backache—are also dealt with.

Simple wall diagrams and a birth atlas have been found to be very helpful and evoke much interest. The last ten minutes of the hour are devoted to questions. Sometimes the mothers are a little slow in coming forward but once one starts the others follow.

A further help in eliminating the fear of labour that hangs over so many women is for someone to explain what is done during labour to relieve pain. Some form of gas and air apparatus should be demonstrated and the mothers asked to put on the mask for a few minutes. We have found that a short talk by the departmental anaesthetist has been of great value. The mothers then realise that there is someone in the hospital whose main concern is to relieve them of distress in labour. The mere knowledge of the existence of such a person goes a very long way to banish their phobias.

These ' pep ' talks are much appreciated and the mothers have been so grateful to find someone who will explain away their difficulties. In the rush of a busy antenatal clinic the mothers realise that then is not the time to ask the harassed doctor questions which to them are of prime importance and may be keeping them awake at night. It is for doctors and nurses to give advice and not for the mother-in-law, who takes such a delight in painting a lurid and exaggerated picture of having a baby.

So many women want to know what actually happens at birth. At these talks they have been asked whether they would like to see a short film of the birth process. Up to the present all except two mothers have warmly applauded the suggestion that they should be shown the main points about a delivery.

Antenatal Exercise and Relaxation Class

At the beginning of the fifth month mothers are encouraged to attend this class. The exercises have been specially designed to relax the pelvic joints. The mothers are trained to adopt the squatting position. The importance of relaxation is stressed and at every visit a considerable amount of time is devoted to this. In this way the mothers are trained for what is the greatest athletic feat in their lives and fear and tension, which are the main factors in the production of uterine atony, are eliminated.

The Food Advice Bureau

In the waiting room of the clinic there should be such a bureau. The ignorance of many women in this country of how to cook food is lament-

able, and the apathy and the obstinacy of their menfolk in the subject almost universal. Four hundred years ago Andrew Boorde, in his *Dyetary of Health*, wrote—" God may send a man meat but the devil a bad cook to spoil it." The supervision of diet should be one of the primary functions of all working in maternity and child welfare clinics. These clinics are attended by a great number of women who could be instructed in the art of buying and cooking food. The sum total of hours spent and wasted by these women in waiting rooms must amount to an astronomical figure.

Such a bureau exists in the antenatal clinic at University College Hospital. A gas stove has been installed so that the food can be prepared in front of the mothers. They sit in the waiting hall watching the demonstrator, they take notes, ask questions, taste the food, and collect Ministry of Food recipes until it is their turn to be examined. The function of the demonstrator is to advise women " what to buy, how to buy and what to do with the food when bought." She should act as an adviser, not teacher of the academic type. This is one of the ways that the mothers of our country could be guided to contribute to one of the greatest measures in public health—proper nutrition.

Breast Clinic

Some person should be detailed whose responsibility is the care of the breasts during pregnancy. These should be examined at the 18th week and if the nipples are inverted then they should be fitted with special glass shells as recommended by Dr. Waller. In his book *Clinical Studies in Lactation* he has described how by careful attention to the breasts during pregnancy and in the early days after delivery successful lactation can be assured. Since we have appointed one of the health visitors to supervise this important aspect of antenatal hygiene we have had many less complications of lactation. Breast abscess has almost disappeared and lactation failure at the second or third month is also much less.

In the foregoing pages an attempt has been made to show how the daily routine of the antenatal clinic can be relieved with advantage to all. The burden of the treadmill of clinic work is a real danger and induces a feeling of frustration which mothers are quick to detect. One has indicated those aspects of clinic practice that should be emphasised in order to maintain a proper attitude to what should be an exhilarating and yet perfectly normal experience—having a baby in this year of grace.

Women of younger years are only too willing to be educated in health matters when these are explained simply and when their benefit to the well-being of both mother and baby is emphasised by a doctor or nurse. What opportunities there are in the antenatal clinic for spreading the gospel of positive health ! But all of us do not seize them.

Hlth. Educ. J., 1948, 6, 75—79

HEALTH EXHIBITIONS

By Laurence Welsh, *Public Health Department, London County Council.*

Education in health, perhaps even more than in any other field, calls for the use of many different methods: not only is variety one essential ingredient in teaching technique, in order to avoid monotony and the consequent strain upon attention, but in health teaching the wide range of social and intellectual strata to which appeal has to be made presents in an extreme form the problem of adapting techniques to particular audiences. In writing of exhibitions as a means of health education, then, I am not unaware that many other forms are necessary; nor in assessing the value of exhibitions for this purpose do I make any claim that they have a general superiority over other methods; it is commonly accepted that they have their place—and, as I believe, a high place—in the armoury of the health educator, but this view can be accepted without derogation to any other method at any particular time or place.

The appeal of an exhibition is easy to understand. It provides a social occasion, even an entertainment, for its visitors; if successful, it attracts people in large numbers to a specific place where their minds and senses may be assailed by a wide range of stimuli; they may be shown models, pictures, charts, specimens and what not which, through the eye, will explain the purpose of the exhibition. The lessons may be reinforced, in the visual field, by films, film strips, slides or epidiascopic displays. Sound can be added, by mechanical devices like wireless or gramophone, or in human form by public addresses, lectures or personal talks to groups or individuals. Literature can be made available so that the visitor may take away for private study the material which it is desired to bring to his notice. Few educational or propagandist methods lend themselves to such varied means of influencing the minds of those who come within their influence.

Organisation of a Health Exhibition

My first purpose here is to state (somewhat dogmatically in order to save space) some of the principles upon which exhibitions should be organised.

The first thing to consider in organising an exhibition is its *purpose*. If it is to interest professional or other specialist visitors it will have to be very different from an exhibition intended for the lay public. But whatever section of the community is to be attracted, only the best

technical standards should be employed: exhibitions are so common nowadays that the public will not respond to anything second-rate.

The next consideration is *timing*. If schoolchildren are to be encouraged to attend as part of their educational activities, the exhibition must be held in the school term. In any case holiday periods should be avoided. I doubt whether there is much to choose between summer and winter except that really bad weather will discourage attendance. The daily hours of opening must be suited to local social customs.

The venue is important. It should be conveniently situated from the point of view of transport and as familiar as possible to those whom it is desired to attract.

If there is an organising committee it should consist of people with expert knowledge in the various subjects to be covered but should not be allowed to deprive the chief organiser of final and even autocratic powers to accept or reject any item. Exhibition display is an expert technique and must be the responsibility of someone with an eye for design and colour and an understanding of popular psychology, as well as knowledge of the theme of the exhibition. He must also be adept at leading the miscellaneous team of technicians and specialists (from high-ranking municipal magnates to manual craftsmen and floor-polishers) whose unity is essential to success.

The comfort of the visitors must always be borne in mind. The hall should be warm, well lit, pleasant to look at, provided with seats, lavatory facilities and, if possible, refreshments. On no account should the hall be overcrowded ; there should be plenty of room for visitors to move about and the exhibits should be so spaced as to avoid the effect of a jumble-sale.

The Exhibits

In choosing the exhibits, including such side-shows as films, it is important to remember that the public expects a certain amount of entertainment and should not be preached at. It is good policy, for instance, to show some amusing films as well as instructional ones. The inclusion of attractive samples of handicraft therapy products made by hospital patients may not be highly instructive but it is likely to give pleasure, particularly to women visitors, and should not be excluded. Nowhere should a boastful note appear in labels, placards, or elsewhere ; let the exhibits tell their own tale and proclaim their own merits.

In general, three-dimensional exhibits are better than two-dimensional, and those which move or ' work ' are better than those which are still. There should be plenty of demonstrators clearly badged and ready to talk to all comers and explain what is going on and what lies behind it. In addition to this, labels should be freely displayed so that the diffident

visitor can get some idea of the nature of the exhibits even if he is too shy to ask. Labels and notices should be uniformly, simply and clearly lettered under the direction of a skilled printer or signwriter.

Statistics are an inevitable ingredient of most exhibitions. A few simple principles should be observed. As far as possible use rounded-off approximate figures and forget the decimal places. Employ diverse methods of presentation—plain figures for simple, direct statements ; columns or graphs to indicate comparisons, with isotype or similar variants ; solid columns in wood or plastic provide yet another and more vivid means of indicating a series of quantities.

In all graphic methods, variety should be sought by the use of hatchings, colours, different planes, etc. Remember always that the attention of the visitor has to be arrested before he will even look at your exhibit.

These considerations apply to exhibits like maps. Bring out the significant parts by mounting them on card in a slightly higher plane than the rest and displaying them in contrasting colours. Carry the eye from the key point of the map to some relevant statistical or other explanatory notes by means of coloured plastic tape.

It is always sound policy to give the visitor something to do with his hands, as well as with his eyes. At an exhibition of mental health services in London a popular feature was the intelligence tests which the visitors (including the present Minister of Health) applied to themselves. It was known as " puzzle corner " and was always crowded. Pieces of apparatus, whether real or model, will always attract interest, especially if the visitor can push a knob and see something work.

If it is possible to link up the models, pictures, charts, etc., of the exhibition with the real things to which they relate this is a good idea. It might, for example, be possible to organise visits to a neighbouring welfare centre or hospital for any visitors who showed special interest.

Publicity Devices

Publicity is of cardinal importance. There must be publicity before the exhibition, in order to let people know that it is coming off ; during the exhibition propaganda should be, as it were, thermostatically controlled—warmed up or cooled down according to the fluctuations in the attendances ; and finally there must be publicity after the exhibition to make sure that its morals are not forgotten.

Among the publicity devices can be considered (1) press articles and advertisements, supplemented if necessary by a conference with journalists ; (2) the exhibition of slides at local cinemas drawing attention to the exhibition and its purpose ; (3) the distribution of posters and handbills through the organisation of the local authority (for example, school children) as well as through shops, railway bookstalls, Government depart-

ments, youth clubs and other social organisations ; (4) in some localities a loud-speaker van touring the streets might be acceptable ; (5) the co-operation of the B.B.C., though difficult to obtain, is invaluable ; (6) prominent personalities, particularly those from the world of stage or screen, are a great attraction if they can be persuaded to attend the exhibition. If they do come it is vital to let the public know in advance.

I conclude this part of my article with the reflection that the exhibition organiser has a job essentially like that of the shopkeeper. To attract customers he needs a good site for his shop, warmth and light and comfort inside, bright display, and easy facilities for customers to see and evaluate the wares. Like the shopkeeper, the exhibition manager will be successful if his clients go away pleased with their visit and determined to send their friends. These are obviously no more than general principles of salesmanship, of the technique of staging exhibitions ; the wares to be displayed, the nature of the exhibits suitable for a health exhibition, would form a theme for another article.

It may be objected that I seem over anxious to entertain the public and have said nothing of the educational content of the exhibition. That is because I have observed, in practice, an excessive concern with content and not enough with making it palatable. However wise, profound, and educative the material may be, it will not achieve its purpose unless the exhibition is cast in an attractive form.

Health exhibitions will commonly be linked with some more general publicity scheme like a civic week and in that case they need to be carefully integrated with the other activities. Pageants, public meetings, and the like should be related with the exhibition, so that, for example, individual exhibits are associated with the theme of a meeting and conversely. Notices and other announcements at the one should draw attention to the other. It is hardly possible to overdo the measures for calling attention to what is being provided.

The Permanent Exhibitions

Another type of exhibition calls for mention, namely the permanent exhibition, which may be either static or mobile. The fixed exhibition which is kept permanently *in situ* should conform to the general principles already put forward ; there is in such an affair a special danger of tediousness and a museum-like atmosphere. It is a good thing to change some of the exhibits from time to time and to use such changes as an opportunity to draw public attention afresh to what is going on. Just as the classical picture galleries from time to time incorporate a special showing of the works of one school or artist, so the standing exhibition can occasionally concentrate part of its space on some particular aspect of its subject, preferably one with a topical appeal. When an

epidemic has occurred, for instance, emphasis might be laid upon infectious diseases and the means whereby they are communicated and controlled.

The mobile exhibition has certain special advantages and at the same time some particular difficulties. It can be moved from place to place, say from one school to another or around the streets of the city ; by this means the crowd is not asked to come to the show, but the show is taken to the crowd. Places of resort, like the fronts of seaside towns, are specially suitable for staging mobile exhibitions, which in winter time can be taken round a series of halls. The main difficulty, of course, is one of compression ; whether the material is actually shown to the public in a large trailer van or is merely carried from place to place and set up afresh at each venue, it is obviously not possible to include so much material as in a fixed exhibition. Even greater care is therefore required in selecting the best and concentrating upon items which occupy the least space. Variety can be introduced by having a reserve stock of material and changing the set-up from time to time. The possibilities of a good mobile exhibition have been exploited by the Royal Society for the Prevention of Accidents, which tours the country with large vans containing a good selection of popular material. Less ambitious examples are those of certain local authorities who take round to their schools the material of an exhibition which is set up afresh and shown for a period of a few weeks in each.

The London County Council accepts no responsibility for the opinions stated or the conclusions reached in the above article.

BIOGRAPHICAL NOTES

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GERALD CAPLAN, M.D., B.Sc., D.P.M., Tavistock Clinic, London.—Has taken up Child Guidance after several years of psychiatric work with adults in mental hospitals and out-patient clinics. Has made some original contributions to problems of the treatment of mental illness and epilepsy. Since the war, has worked both in the adult and children's departments in the Tavistock Clinic and at the Institute of Psycho-Analysis.

JOHN BOWLBY, M.A., M.D., Tavistock Clinic, London.—Worked before the War at the London Clinic of Psycho-Analysis and the London Child Guidance Clinic. Served as an Army psychiatrist from 1940–1945, engaged principally on officer selection. From 1944–1947 was Training Secretary at the Institute of Psycho-Analysis. Since 1946 has been Director of the Child Guidance Department, Tavistock Clinic. Author of *Forty-Four Juvenile Thieves* (1946), and other works.

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HEREDITY AND ENVIRONMENT —PART II ENVIRONMENT

By M. H. Clifford, M.A., Ph.D., B.Sc., *Extra Mural Lecturer in Natural Science, University of Cambridge.*

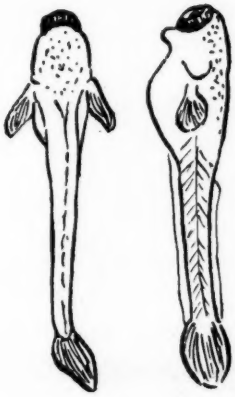
Environment for the biologist is the medium within which the effect of any particular gene is developed. It includes all those chemical and physical factors which influence development from without, and also the modifying tendencies of the other genes which by their presence influence the conditions within the organism. These two aspects of the environment are known as external and internal respectively. In mammals the external environment covers both ante-natal and post-natal influences. It operates through factors involved in nutrition, protection, play, instruction and affection. It is by such means that tradition, whether family or racial, serves in some measure to shape the growing organism. In man these formative influences are made the more potent by the long period of infancy, with its imitative play and dependence upon family provision, and by the responsiveness of the human nervous system in developing new habit patterns in relation to external circumstances.

Nature or Nurture?

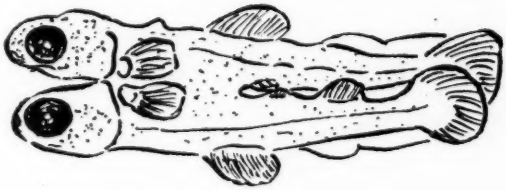
Reflection will make it evident that the relationship of environment to heredity, and the reverse, is so intimate that the one is meaningless without the other. In extreme instances the influence of the one may *appear* to override completely that of the other. Thus eye colour is but little influenced by environment, whilst the contraction of infectious disease is to a large extent determined by the chances of environment. Nevertheless eye colour is somewhat dependent upon the general state of health and upon age, whilst infection can only develop within a body, the resisting powers of which, as we shall see later, are in some measure expressive of hereditary condition. It is thus unrealistic, as well as unfortunate, when the relationship is presented as nature (heredity) *versus* nurture (environment). Practice based upon such an attitude will lead to the extremism of the eugenic hereditarians, or of the uncritical kind of social reformer. The biologist will seek to ascertain and analyse the complete system of causation in order to arrive at an estimate of the degree of control that will result from improvement in breeding and in upbringing respectively. The means by which to achieve any given change in the quality of human kind will then be known, though action will still be subject to agreement upon the desirability of the change in question. A few examples of the interaction of heredity and environment will now be examined in this light.

THE MODIFICATION OF DEVELOPMENT BY ENVIRONMENT

1.



2.



3.

1. Normal type of fish (Fundulus) reared in ordinary sea water.

2. Cyclopean (one eyed) form reared in sea water containing a high proportion of added magnesium salt. Two aspects (from above and from the side) are shown. Treatment must be begun at a very early stage in the life of the embryo.

3. Duplicate and twin formation in young fish induced by lack of oxygen at a very early stage of embryonic life. Similar conditions have been produced by lowering the temperature of the egg during the early phases of its growth.

All figures after C. S. Stockard.

LIVING EXHIBITS.

A nursery reproduced in an exhibition by Wandsworth Borough Council.

(*See article on page 75*)

Sex and Its Expression

In mammals sex is determined at the moment of fertilisation. Females result when the fertilising sperm bears the full complement of chromosomes (i.e. half the number of the chromosomes found in the body cells). Males are the result when the sperm lacks a fragment of one of the chromosomes—the so-called sex chromosome. As a result of this mechanism women have 48 chromosomes in their body cells, whilst men have 47½ chromosomes in each cell. But the embryo is capable of deviating from its genetical sex in response to certain environmental factors. In cattle the sex development in the case of twin births is abnormal in about 90% of those cases where the twins are of different sex. In these cases the putative female is caused to deviate towards maleness so that it becomes an intersexual, sterile " freemartin." The male twin is normal, and it is generally considered that the phenomenon is due to the earlier development of its testes with consequent hormonal influence upon the later maturing female embryo. The cause of intersexuality in man is not yet known.

Structural Development

Reference to the accompanying figure will show the influence of environmental factors during the development of fish and frog larvae. Abnormal creatures can be produced from batches of eggs, the remainder of which develop normally under control conditions, by modifying the oxygen or salt content of the water. Owing to experimental difficulties it cannot yet be said to what extent human monsters may be due to unfavourable uterine conditions. However, both the abortion rate for male embryos and the probability of mongolism are related to the mother's age at conception.

Infectious Diseases

Syphilis of the unborn and of the new born is not inheritable via egg, or sperm. It is congenital ; that is, contracted from the mother prior to, or shortly after birth. But instances are known where only one of a pair of twins has contracted the disease in this way—a fact suggestive of the involvement of hereditary factors.

Tuberculosis is contracted post-natally. That the environment is an important factor in the process is suggested by the rearing of healthy children in tuberculosis settlements. But there is some evidence from the statistics of twins that hereditary factors are also concerned. Where one of a pair of twins is tubercular the *frequency* with which the other is also tubercular is much higher in the case of identical twins (having the same heredity, being produced by the division of one fertilised egg) than it is for fraternal (non-identical) twins. The same kind of evidence

seems to indicate that, likewise, the *site* of the tubercular lesion is in part determined by genetic factors.

So far as heredity is implicated in relation to infectious disease it is likely that what is inherited is a state of relative resistance or relative susceptibility, the outcome depending upon the conditions of exposure to infection.

Intelligence

Some but not all forms of feeble-mindedness appear to show a pedigree indicative of transmission as a recessive defect. Certain kinds of special ability appear to run in families in a way that might suggest transmission as a dominant or interaction effect. But it is not always easy to rule out the possibility that family tradition and environment constitute the primary cause in these cases.

For the normal range of intelligence, correlations exist between the I.Q. of children and the occupation of their parents. Once again this evidence is capable of more than one interpretation. But it would seem from the statistical data that the genetical make up is *involved* in the development of intellectual ability. This conclusion emerges from a study of the varying correlations of I.Q. as between identical twins, fraternal twins, ordinary brothers and sisters, and between unrelated pairs. It is also to be recognised from the wide differences of I.Q. that can occur among the children of the same parents reared together. What is less evident is the *degree* to which heredity and environment respectively influence I.Q. This difficulty is additional to the uncertainty of what it is that is measured by intelligence testing.

Conclusion—Some Practical Considerations

If man, by **selective breeding,** is to control the biological quality of future generations two conditions must be fulfilled. Firstly agreement must be reached with regard to the excellence or otherwise of each characteristic. Secondly it must be known how the characteristic is determined genetically before any worthwhile practical measures can be designed for the alteration of its frequency by selection. Even then it is necessary that the situation thus understood should lend itself to control. Thus in animals there is some evidence that genetical factors are associated with the onset of cancerous growths. But so many factor pairs appear to be involved that the situation in any community of animals practising cross-mating would seem to be beyond computation. Only in the case of highly inbred lines (from brother-sister, and father-daughter matings) does the genetical aspect assume *practical* status in relation to the development of tumours. Thus *should* a similar situation be found to exist for cancer in man genetical control would be unlikely to help in the eradication of the disease.

With respect to intelligence it has been indicated that this is in part the result of a favourable genetic constitution. But almost certainly many factor pairs are involved in bringing this about (cf. Part I—Pigmentation in mulattos). Thus persons favourably endowed in this respect should have a greater *probability* of producing able children, particularly where both parents are alike in this respect. But because many factor pairs are involved some quite able persons will *occasionally* produce defective children, and some partly defective parents will produce an *occasional* able child. At the present time there is uncertainty as to whether intelligent persons produce families as large as parents less able. It is probable that they are not doing so, and many biologically minded observers regard such a circumstance with concern. But it has been seen above that whilst intelligence is a heritable characteristic we may not prejudge a man's mental ability by reference to that of his father, or of his mother. Nor can we do so by reference to his occupation, or to his social class. Mental ability is where we find it, though it may be more frequent in certain situations. A case thus exists for the view that **improvement of the environment** should precede eugenic measures designed to raise the average level of intelligence. With equality of educational opportunity the able would be clearly recognisable, and the less fortunate deprived of other excuses. It would then be more readily perceived that to ensure the maintenance of intelligence into future generations such a society must provide for the reproduction of its able members to be as great as that of its less able ones. To increase intelligence in subsequent generations the propagation of the able would need to be increased relatively to that of the less able. Selective reproduction for intelligence in rats has already demonstrated the practical possibilities of producing striking increases in average intelligence by this method after only a few generations.

It is not, therefore, too soon for the men and women of our society to consider the implications of genetics with respect to human betterment. In particular this is needful not only on account of the growth of scientific knowledge in these fields, but also on account of the present tendency towards a more equalitarian society in which performance will be increasingly the expression of innate quality.

Books for further reading

C. Pincher.	*The Breeding of Farm Animals.*	Pelican.
A. Scheinfield.	*You and Heredity.*	Chatto & Windus.
O. Maguinness.	*Environment and Heredity.*	Nelson.
E. Ford.	*Genetics for Medical Students.*	Methuen.
H. Jennings.	*The Biological Basis of Human Nature.*	Faber & Faber.
J. Haldane.	*Heredity and Politics.*	G. Allen & Unwin.
L. Burlingame.	*Heredity and Social Problems.*	McGraw-Hill

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THE SANITARY INSPECTOR AND HEALTH EDUCATION

By Stewart Swift, M.B.E., *Chief Sanitary Inspector, Oxford.*

The work of the sanitary inspector, concerned as it is with environmental hygiene, is the basis on which the personal health service is organised. A century ago, the need for improvement in the environment was an urgent and obvious problem, so much so that it engaged the serious attention of such men as Chadwick and Shaftesbury, the great sanitary reformers of the early Victorian era. With the passing of over one hundred years, many of the earlier problems have been satisfactorily dealt with. Notwithstanding this fact, however, it remains true that without constant attention to the preservation of a satisfactory environment, the public would not for long enjoy the benefits resulting from the work of the past. Daily attention to the details of sanitary administration is essential. No amount of medical skill and practice will take the place of good sanitation. Sanitary administration has been the means not only of improving the amenities of all classes of the population, but it can claim also to have contributed in no small measure to the reduction of mortality and invalidity. The improvement in the environment involving questions relating to drainage and water supply, scavenging, housing, food, etc., has been followed by improvement in the vital statistics. In short, the basis of all public health work is a sound environment.

The sanitary inspector is one of the officers who must be appointed by every local authority. His training and qualifications are prescribed by an Examination Board established by the Minister of Health ; no person may hold office as sanitary inspector unless he holds the statutory qualification ; and he is a statutory officer invested with extensive powers conferred upon him by Parliament in the Public Health Act, 1936, Housing Act, 1936, Food and Drugs Act, 1938, and Orders and Regulations made under the provisions of those Acts. His work may be divided into three main sections: general sanitation (including drainage and sanitation ; water supply ; atmospheric pollution ; public cleansing ; nuisances and offensive trades ; common lodging houses, canal boats and moveable dwellings ; factories, workplaces, offices and shops ; and rodent and insect pests) ; housing (including housing inspections, repair and reconditioning of insanitary houses ; slum clearance and redevelopment areas ; and overcrowding) ; and food inspection (including meat inspection and control of slaughtering ; milk and dairies ; adulteration of food ; preparation, storage and sale of food ; and food inspection in general).

A Natural Health Educator

It is obvious from a glance at the above list of subjects coming within the province of the sanitary inspector, that his work is of vital concern to every member of the community and that in its execution he comes into close contact with all sections of the public. His first work, therefore, in health education is to make the public aware of the sanitary services which are available for their use if need be, and there is a lamentable lack of knowledge of the work of the sanitary inspector. An increasing number of sanitary inspectors find time to give talks to all kinds of people on the work they carry out. Such groups include women's institutes, towns women's guilds, clubs of all kinds, youth organisations, and the like. Work of this kind is of tremendous importance and should be developed to the utmost extent. Usually the group is small in number, so that by question and answer at the end of the formal address, members of the audience may obtain further details on points of particular interest to them. Meetings of this sort enable the sanitary inspector to explain the extent of his powers—which it is not always realised are not limitless—and in addition give him an opportunity to indicate how the public may themselves assist in the work of improving and maintaining good environmental conditions.

The sanitary inspector, because he comes into intimate contact with the people in their homes, has an unrivalled opportunity of teaching the laws of health. It is one of the more unpleasant, but nevertheless important, duties of the sanitary inspector to deal with dirty, verminous and insanitary premises. Although much is achieved in this field by the use of statutory powers, greater success results when the persons concerned are taught the necessity for cleanliness, so that further trouble does not arise in the future. This is difficult and painstaking work. Success is by no means always assured. There are many failures to dishearten the sanitary inspector, and he may be forgiven if in some instances he regards individual cases as hopeless. Nevertheless, a great deal of work of real and permanent value results from work of this kind and every opportunity should be taken to deal energetically with uncleanliness in any form. Unfortunately, cases of this kind are rendered more difficult at present owing to the shortages of soap and other cleaning requisites.

It is always more difficult to secure a good standard of cleanliness in the home when the structural condition of the premises is not satisfactory. In normal times, the sanitary inspector is able to require the repair and reconditioning of insanitary houses, thereby making conditions easier for the housewife. The efficient use of his statutory powers in this field is a potent force in the field of health education, because good structural conditions encourage householders to keep their homes in a clean and

satisfactory state. In this connection it is important to realise that the sanitary inspector is not a sanitary policeman concerned merely with the enforcement of the law. He should be the guide and friend to all sections of the community with whom he comes into contact, explaining the reasons why certain steps are necessary, thus carrying the public with him in his efforts to improve the environment.

Health Education on Specific Subjects

So far I have referred to the more or less indirect ways in which the sanitary inspector is concerned in health education—explaining the nature of his work, carrying out his own job efficiently and teaching the public the laws of health in their own homes. With regard to the specific subjects with which the sanitary inspector can deal, some are of general interest, others concern selected groups of people. In the field of food hygiene, the sanitary inspector is pre-eminently qualified to teach those concerned in the preparation, handling, transport and sale of food, the laws of health and the proper methods to adopt in order to avoid food becoming contaminated and a danger to the consumer. This involves a sound knowledge of all aspects of the food trade, knowledge possessed by the sanitary inspector trained as he is to act as a food inspector. Talks to selected groups of food workers handling particular food products, are of considerable value. If dealt with on a comprehensive basis they arouse interest and it is surprising to what lengths work of this kind can be developed. I well remember issuing a series of Clean Milk Bulletins to farmers and dairymen, over twenty years ago, and the interest created had a marked effect on the methods of production and handling of milk. Later, talks to dairy workers, and meat traders, developed into a series of lectures—organised by the local education authority—on dairy technology and meat hygiene respectively, with further beneficial results so far as the handling of those foods was concerned.

Leaflets may be used as a useful means of conveying information on specific subjects. Years ago I was able to achieve some success by the issue of a series of Public Health Bulletins dealing with such subjects as the Care of Milk in the Home, Destruction of Rats and Mice, the Housefly, Refuse, Ventilation and Fresh Air, and similar subjects. These leaflets were distributed through schools, in public buildings and by various organisations.

To summarise, I have attempted, very briefly, to show that the sanitary inspector has an important part to play in the field of health education. His training and practical experience in all matters of environmental hygiene, equip him admirably for work of this kind. Probably the most important contribution he can make to the subject is the efficient execution of his own duties, which form the basis on which the present-day

all-embracing personal health service has been built. His task is rendered extremely difficult at the present time owing to shortages of labour and materials, so that he can only achieve partial success. It is a thankless task to preach the gospel of cleanliness when soap and other cleaning materials are in such short supply. Similarly, to urge cleanliness in the home when structural defects cannot, in all cases, be satisfactorily dealt with is an equally difficult problem. In addition to indirect propaganda the sanitary inspector can do much by talks on his own job to spread a knowledge of environmental hygiene. Finally, there is an immense field for lectures and talks to selected groups on particular aspects of food hygiene, and other matters with which the sanitary inspector is concerned.

THE BRITISH EMPIRE CANCER CAMPAIGN

Patron, H.M. THE KING.

President, H.R.H. THE DUKE OF GLOUCESTER.

Chairman of Grand Council, THE RT. HON. VISCOUNT HAILSHAM.

The British Empire Cancer Campaign was founded in 1923, and was incorporated under the Companies Acts (1908 to 1917) as a limited liability company with the omission of the word "Limited" from its name because it does not trade for profit.

The objects of the Campaign are to attack and defeat the disease of cancer in all its forms; to investigate its causes, distribution, symptoms, pathology and treatment; and to promote its cure. To attain these objects it co-ordinates and subsidises cancer research at the principle centres and institutions in the United Kingdom, and has affiliations throughout the Empire.

The Campaign is directed by a Grand Council in London, with the assistance of various expert Committees. Certain areas of the country are controlled by autonomous councils, working in close collaboration with the Grand Council. These areas are:—(i) North of England, (ii) Lancashire, Cheshire and North Wales, (iii) Yorkshire, and (iv) (the City of) Birmingham. All funds collected for the Campaign in each of these areas are devoted to cancer research in it. Except in the autonomous areas, which have their own Scientific Committees, all advice on scientific work to be carried out, including the initiation of new schemes of research, or the intensification of schemes already in progress, is given to the Grand Council by the Scientific Advisory Committee (under the Chairmanship of The Lord Horder), the members of which are appointed jointly by the Campaign, the Royal Society and the Medical Research Council.

The Campaign publishes an Annual Report giving a resumé of all research work carried out under its aegis during the preceding twelve months. It also publishes the *British Journal of Cancer* in which the most recent papers on all aspects of cancer research are to be found.

The British Empire Cancer Campaign, 11 Grosvenor Crescent, Hyde Park Corner, London, S.W.1. (*Tel.* SLOane 5756-7.)

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THE PROBLEM FACING AGRICULTURE

By D. P. Cuthbertson, M.D., D.Sc.,
Director, Rowett Research Institute.

We have now experienced our third winter of post-war food shortages. An ever-increasing world population and abnormal seasons of extremes of heat and cold have widened an already serious gap between our nutritional requirements and the available food supply. There was always too little, but war, famine and pestilence tended to restore the balance. It is true, of course, that the large family was in part a natural reaction to the ravages of these agents of destruction ; and with greater security, increased food production and an improved preventive medicine, the need to safeguard survival by means of large families disappears. And as education develops there tends to be a parallel reduction in birth-rate : indeed, the decline in birth-rate and the increasing average life-span which has set in in certain nations, including our own, has given rise to alarm. Nevertheless with increasing knowledge of the control of disease, and the application of this knowledge, the chances of survival increase ; many wonder if expanding production will ever catch up with the increasing population which may mount still more rapidly when war, famine and pestilence gradually recede.

The World's Food

There is therefore an awakening spirit of responsibility in the producing countries to see that steps are taken to step up world production of food so that there will be sufficient to provide food on a health standard for all. However, though the production of wheat in Australia is up by two million tons, a survey by the Secretary-General of the International Emergency Food Council of F.A.O. has shown that the exports of producing countries are apparently no larger than last year's ; and the outlook during the cereal year of 1947–48 for cereal production in Europe (exclusive of the U.S.S.R. and the lower Danubian countries) is equivalent to a reduction on the 1946 year of about one sixth of a pound of bread per person per day. It therefore seems inevitable that either bread rations or livestock feeding, or both, will have to be reduced in many countries.

There are two bright patches in the gloomy picture : the world's sugar situation has improved through the magnificent crop in Cuba, and the phenomenal production of copra in the Phillipines has increased the supply of fats and oils. As a consequence, agreement has been reached on the allocation recommended for fats and oils for the calendar year 1947. Nevertheless steps are now urgently required to hasten the recovery of fat and oil production in other parts of the world.

During the last two years, most European countries have been making some progress in the rehabilitation of their livestock industry. But this may have been done at too rapid a rate. Because of the abnormal weather conditions in Europe, there is a very serious shortage of forage and fodder root-crops: the amount of grain required for livestock will therefore be larger than last year's. So the land that has been set aside for forage, fodder root-crops, pasture and indigenously produced coarse grains might have been better used to yield more calories directly for human consumption in the shape of cereals and potatoes, or to feed a smaller number of livestock more efficiently.

In this country however the Government's view is that there should be some increase in livestock production, to improve the nutritional value of the diet and relieve its dull monotony. The increases expected—as a long term aim—are for beef and veal 15 per cent., mutton 18 per cent., pork 85 per cent., eggs 90 per cent. and milk 15 per cent.

The Drift from the Land

Another factor operating against the full development of the potential agricultural resources of this country is the drift of its manpower from the land. In Scotland this clearance is almost comparable to the tragic clearances from the Highlands of historic times. The disappearance of a key-man in the communal life of a village or district, or failure to find a postman or skilled craftsman, may be sufficient to cause considerable numbers of the younger and more progressive people to leave the community. The present housing shortage also limits settlement. Steps must therefore be taken to limit the drift. The ideal is the creation of family holdings with many of the social amenities of town life to be found in the local village or small towns built round new industries.

Unfortunately townsmen are generally unaware of what the country is and means to them, although it is there that men, women and children toil and sweat to produce food for themselves and for the rest of mankind. It is encouraging, however, to note that a movement under the Association of Agriculture fosters the education of the youth of the towns on the ways and role of the countryside.

National and Individual Responsibility

The nation's responsibility in this matter is the collective responsibility of its individual citizens. At every point where food is produced, stored or distributed the greatest care must be exercised to see that there is no avoidable loss: if care is exercised by all who deal with and consume food—and the housewife has a great responsibility—it is just possible that our economies may, in part at least, offset the reduction in the amount of food available for consumption.

What else can we do? We can conserve food and explore methods of utilising other forms of materials which can be converted into food ; we can improve our tools ; and we can increase the production of fertilisers and apply them on the best principles so as to increase production. Adequate allotments of raw materials for this end and for the production of agricultural machinery are vital necessities. Much can be done too on the lines of the " Dig for Victory " allotment campaign and by backyard poultry production. Most farmers could keep a pig or two. Improved methods of conserving grass are also necessary. The simplest of these is the trench silo : its cost of production is simply that of the manpower involved ; and it should therefore be used more extensively, particularly in areas where there is difficulty in making hay in summer and in feeding during winter. Much new knowledge has accumulated regarding the control of pests and much can now be done to limit infestation, which causes considerable losses in food. Methods of increasing distribution and of retaining the highest possible nutritional value in the products distributed, are also worthy of study.

Knowledge must be Applied

Much can undoubtedly be accomplished by the application of existing knowledge. The spread of this knowledge and its application in the conduct of agriculture is of the very greatest importance. Information can best be disseminated by two complementary methods. The first is by means of an advisory service whereby specially trained persons, generally members of state or college staffs, advise the farmer by lecture and demonstration. The other—and in certain circumstances perhaps the more effective—method of inducing a change, is for enlightened farmers to talk to their less progressive brethren and so to stimulate them to a better agriculture. This last method has proved itself in practice in the North-East of Scotland where once a month on market days farmers gather to listen to fellow farmers who have improved methods to describe. The advisory or college officers can do much behind the scenes to secure the best ideas and speakers. The Young Farmers' Club movement too, concerned as it is with the art and science of farming and living, promises to help to bring about improvements in the health and well-being of our nation.

The underlying purpose of agriculture is to maintain the highest possible standard of living for the people—not for to-day only but to secure the well-being of future generations. Unfortunately in many parts of the world the pressure of economic circumstance is such that farmers seek to make a livelihood now and are not taking account of their own long-term interests or of the interests of future generations.

War returns to the elements, air, earth and water, the product of man's

industy and ingenuity. Much is irrecoverable. Not only do the machines of war and their explosives disappear but the means to produce are affected. In the most recent war it has been calculated that the destruction of productive facilities and basic resources was seven times greater than during the first world war. Meantime, since the beginning of the recent war some 200,000,000 persons have been added to the world's population.

It will be seen then that the problem facing agriculture is a highly complex one. And there is no simple solution: the furrow to be hoed is long and hard. We are all vitally concerned; and we all have a contribution to make—governments by wise and unselfish planning and distribution; farmers by using all modern resources and knowledge; and we consumers by avoiding every form of preventable waste, and by doing what we can to help ourselves.

SUMMER SCHOOL IN HEALTH EDUCATION IN ENGLAND

There are still a few vacancies at the Central Council's residential Summer School at High Leigh, Hoddesdon, Herts (August 11th to 25th 1948) and readers who are interested are urged to write at once for full particulars or, if they already have them, to send in their applications.

The school will provide a comprehensive programme in which Professor Samson Wright will deal with Physiology, Professor James Drever with Psychology, Dr. Robert Cruickshank with the Biology of Infection and Professor J. M. Macintosh with Social Factors Affecting Health. Lectures will be followed by discussions under expert leadership.

In addition there will be excellent opportunities for nature study, for social and physical recreation, and for visits to places of interest.

The inclusive cost will be £16 16s. Full details will be supplied on application to:—The Medical Adviser & Secretary, The Central Council for Health Education, Tavistock House, Tavistock Square, London, W.C.1.

Summer Schools in Health Education in Scotland

The Scottish Council for Health Education is holding summer schools as follows:—University College, Dundee, 10th to 24th July—inclusive fee, £12. (Theme: Principles of Healthy Living.) Strathpeffer Spa, 24th July to 7th August—inclusive fee, £14. (Theme: Parent-Teacher Co-operation.) Broomlee Residential Camp, West Linton, 7th to 21st August—inclusive fee, £7 17s. 6d. (Theme: Fitness and Youth.)

Full particulars of the Scottish Schools from:—The Secretary and Treasurer, Scottish Council for Health Education, 3, Castle Street, Edinburgh 2.

FILMS

YOUR CHILDREN AND YOU. 35 and 16mm. Black and white. Sound. 30 mins. Central Office of Information for Ministry of Health. Director: Brian Smith. Music composed by William Alwyn. On free loan from the Central Film Library.

This film gives practical advice on problems arising with children up to five years of age ; in particular, amusements and interests, good habits, crying in the night, refusing food, tantrums, fears, jealousy, punishment.

Many parents would resent an implication that they do not know what is best for their own children. This film successfully avoids any suggestion of a lecture to the wrong-headed or ignorant. From a subject of wide scope, salient points have been selected and have been presented clearly and yet with human warmth and full recognition of the child's point of view.

The film is well photographed and the presentation is dramatic. The section on fear is particularly effective.

The film is recommended to parents and to all who have to deal with young children. It contains so many valuable suggestions that it is doubtful if all would be taken at one viewing. It would be useful to show the film as a whole and then again in sections with breaks for discussion.

L. E. H.

YOUR CHILDREN'S MEALS. 35 and 16 mm. Black and white. Sound. 15 mins. Central Office of Information for Ministry of Health. Made by Realist Film Unit. Director: Alex. Strasser. On free loan from the Central Film Library.

Five main points are considered :—mental and physical conditions and their effect on appetite ; the mother's attitude ; meals with the family ; making meals look attractive ; punctuality and regularity.

These points are well-chosen and emphasised in some cases by specially composed music and sound effects, in others by amusing model and trick shots. They are likely to " stick in the mind."

It is a useful, interesting and well-photographed film.

The film was designed for parents and can be recommended to parents' associations, adult clubs, secondary school leavers (as part of a training for parenthood), and indeed, to all concerned with the education and training of young children.

L. E. H.

REVIEWS

RECENT ADVANCES IN PUBLIC HEALTH, by J. L. Burn, M.D., D.Hy., D.P.H. (J. & A. Churchill. 1947. Pp. 409. Figs. 82. Price 25s.)

The book is produced in Messrs. Churchill's well-known Recent Advances Series. Dr. Burn states in his preface the difficulties which assail a compiler and a commentator in dealing with such a vast subject. In the first place seventeen years have elapsed since the publication of Haslam's *Recent Advances in Preventive Medicine* and in the second place the author reminds the reader that no attempt is made at a balanced or complete picture of public health progress. He aptly suggests that he might have included in each chapter heading the words "some" aspects of "some" recent advances.

The contents of the book fall under three main headings: Public Health and the Individual (some 220 pages), Public Health and the Community (some 120 pages) and Public Health and the Environment (some 65 pages).

Recent Advances in Public Health in so far as it follows its author's assessment of "some" aspects of "some" recent advances is a valuable contribution to current public health literature. As a book of reference for the health department or as a supplementary text book for the undergraduate and D.P.H. student, it will find a definite place for some time.

What weakness the book has, lies in what might be described as patchiness (and especially in Part III) which is almost inevitable when attempting to cover such a large field. Environment seems almost an afterthought in relative proportion to the other sections and "recent advances" in food-borne infections or in housing standards do not find a place.

For the production the publishers merit congratulations because the text is readily readable and the illustrations are well presented (and particularly appreciated is the bias towards the personal and human subject matter of the photographs) which tends to keep before the reader the principle that a public health service after all is but the sum total of human and individual considerations.

It is hoped that the publishers and the author will not allow a further 17 years to elapse before production of another volume.

W. S. WALTON.

A FUTURE FOR PREVENTIVE MEDICINE, by Edward J. Stieglitz, M.D., F.A.C.P. (The Commonwealth Fund, New York. 1945. Pp. 68. Illus. Price 6s.)

This monograph is one of twelve which are being published by a Committee on "Medicine and the changing Order" appointed by the New York academy of medicine. The publications are expressions of the personal opinion of the authors and are sponsored as "contributions to contemporary thought on important questions in the general medical and health field." This monograph is peculiarly timely and should be carefully studied by all who are interested in the future of the health of the nation. The author avoids the twin pitfalls of ambiguity and dogmatism. He stresses the paramount need for a better realisation of what is or should be connoted by the terms 'Preventive' and 'Social' medicine. The changes in the age structure of the population with their sequelae in health problems are succinctly reviewed and the lessons arising therefrom are simply put. He stresses the need for education of the medical student, the practitioner and the public in the basic factors as well as in the detailed practical applications of healthy living. He appeals for greater help from the teachers of clinical subjects—in the States, as in the United Kingdom, lip service to the value of

prevention appears to be the rule and real insistence on it as the main function of all doctors with the good of their patients at heart is the notable exception.

ANDREW TOPPING.

YOUR SEX QUESTIONS ANSWERED, by G. Ryley Scott, F.Ph.S.(Eng.), F.Z.S. (Knole Park Press, Ltd., Sevenoaks, Kent. 1947. Pp. 252. Price 7s. 6d.)

Mr. Ryley Scott has written an excellent little book which sets out to answer many of the questions about which many people are still very worried and still cannot find easy answers to. There are about 300 questions in the book, dealing with the whole range of sex and marriage.

Whilst one must make a few criticisms of a book which covers so wide an area, they are of a very minor character and one can thoroughly recommend this book to those people seeking answers to their questions. Indeed, the only criticism that I have is concerned with the blurb on the cover. One cannot help feeling that had the person who wrote the blurb, read the book, he would no longer talk about "intimate and delicate problems relating to their sex life." Can we not realise that sex is both positive and creative and far from being a tender flower which needs such careful attention?

EDWARD F. GRIFFITH.

SMOKE, by Arnold Marsh, M.Sc.Tech., M.Inst.F. (Faber & Faber. 1947. Pp. 298. Illus. Price 21s.)

Mr. Marsh in the foreword to his book states that he has attempted to meet the need for a survey of the available literature on the subject, and to provide a textbook dealing with the technical details concerned in the problem of pollution by smoke, together with a policy for ending it. He has succeeded in doing this and the result is a book which will form a standard work of reference to all those engaged in the prevention of pollution of the atmosphere by smoke.

The book is broadly divided into two parts. Part one sets out a complete case against smoke pollution. After an historical introduction and a technical treatment of the subject, the cost of pollution is set out in terms of damage to human beings, plant life and property and there is an excellent chapter on the cost to the nation in money of smoke pollution.

The second part deals with the methods of prevention. The engineering, chemical and scientific problems involved are clearly stated and there is a chapter on the legal aspects. Finally there is set out a plan for the future.

The book contains excellent photographs and there is a very complete list of references. It is recommended to all engaged in public health work, to all medical officers of health, to all sanitary inspectors and to members of local authorities.

I. G. DAVIES.

PSYCHOLOGY OF WOMEN, Vol. II.—MOTHERHOOD, by Helene Deutsch, M.D. (Research Books Ltd. 1947. Pp. 430. Price 25s.)

This is the second volume of a comprehensive study on the psychology of women. The book is intended to explain the findings of psycho-analysis and Helene Deutsch's own contributions on the subject to a wider professional and lay public. For this purpose each theoretical conception is extensively amplified by case material collected by the author in her work as counsellor and partly taken from her psycho-analytical experience. Women's psychology as understood intuitively by well known writers is explained with the help of our theoretical knowledge, showing the similarity between both conceptions, the artistic and the scientific one. Especially illuminating are Helene Deutsch's at-

tempts to clarify certain ideas with the help of modern anthropological studies, showing how such studies can become enlivened by confronting them with modern psychological conceptions.

In this volume Helene Deutsch continues to show the difference in reaction to the various phases of womanhood in different types of women. The author distinguishes between the psychological phenomena related to motherhood, motherliness and sexuality, phenomena which are interrelated but the separation of which allows of greater insight into normal and abnormal behaviour. In the discussion of all the different aspects of motherhood, social and biological factors are always taken into account. The book is a very valuable contribution to our knowledge of the behaviour and reaction of women to sex, pregnancy, childbirth, etc., and throws light on the problems of unmarried mothers, adoptive mothers and stepmothers.

KATE FRIEDLANDER.

THE PROBLEM GIRL. A report by a Joint Committee, British Medical Association and The Magistrates Association. (The British Medical Association. 1947. Pp. 15. Price 3d.)

This report is a most human document. It deals with girls aged usually between 13 and 17 who come before the Courts for stealing or because they are regarded as being beyond control, in moral danger, or needing care and protection. For almost the first time in a publication dealing with this type of girl it is emphasised that their main difficulty is a definite character defect. Irrespective of their I.Q. these girls show a high degree of emotional instability. The report makes constructive suggestions for their treatment and advisedly points out that there are limitations to treatment and that miracles cannot be performed.

J. MACALISTER BREW.

GOOD HEALTH WITH DIABETES, by Margaret B. Muir, S.R.N. and Ian Murray, M.D., F.R.F.P.S.G., F.R.C.P.E. (Livingstone. 1947. Pp. 40. Price 2s.)

This booklet must be a boon to people connected with the Clinic of its origin but the weighed diets recommended would only confuse the vast number of diabetics who are instructed simply to measure their carbohydrate foods. The 1 c.c. syringe illustrated on page 27 with its twenty graduations labelled as "Units" perpetuates an unfortunate error which arises when even the 40 and 80 units per c.c. strengths of insulin are used. To the intelligent and devoted patient, however, this book should bring that good health which is the inevitable reward of the controlled diabetic.

H. WHITTAKER.

CANTEENS IN INDUSTRY, a Guide to Planning, Management and Service. (Industrial Welfare Society, 14, Hobart Place, S.W.1. 6th edition. 1947. Pp. 85. Price 4s. 6d.)

The sixth edition of this valuable booklet is more comprehensive and stimulating than its predecessors. In addition to plans and photographs, there is expertly accumulated data on planning, internal construction, kitchen layouts, methods of service, finance, staffing, food and diet and the law as it applies to works canteens. The information is put forward as a basis for intelligent discussion, as each canteen has its peculiar problems. There is an important appendix on canteen accounts. Miss Garrett's researches have greatly assisted canteen committees and managements to assess their position.

The authors of *Canteens in Industry* are aware of the inadequate training facilities for canteen staff, but do not seem perturbed at the poor type of training available for cooks. Industrial canteens might do much in making a widespread improvement in our national cooking.

MARY WYKEHAM ELLIS

IF YOUR CHILD IS DEAF, by Irene R. Ewing, O.B.E., M.Sc., D.C.L., and Alex. W. G. Ewing, M.A., Ph.D. (The Deaf Children's Society, 105 Gower Street, W.C.1. 1947. Pp. 15. Illustrated. No charge.)

This is a very valuable guide to parents of deaf children, giving sound technical advice and written in a very human way. Its reassuring tone will give parents confidence that there is much that they can do to help their child and to prevent the disability from cutting him off from success in life. A particularly valuable aspect of the book is that it suggests making use of the strong social impulses of the baby and his desire to communicate with his parents, and that visual means should be used in place of the usual auditory stimuli. The illustrations add to the value of the encouraging and helpful advice given. D. E. M. GARDNER.

MATERIAL FOR VISUAL EDUCATION, by Betty Harris. Edited by G. P. Meredith. (Daily Mail School-Aid Department. 1947. Pages 96. Price 2s. 6d.)

This compendium represents useful research work in a situation that is rapidly developing. It meets an immediate need and will be eagerly perused by teachers, lecturers, organisers and authors for the wealth of information ready to hand. The report is not a pamphlet to be read from cover to cover but rather a pocket encyclopaedia to be consulted when information on details of visual material and visual appliances is required. There are four main sections:—Sources of static material, Film catalogues, Organisations touching upon visual education and Miscellaneous information. Two minor criticisms are that the cover will not stand much wear and tear, and that the illustrated advertisements might have been more extensive.

P. M. TAYLOR.

GLIMPSES OF FAMILY LIFE—CHINA. GLIMPSES OF FAMILY LIFE—THE SOVIET UNION. (Macmillan. Pp. 64. Illustrated. Price 1s. 4d. each.)

These small booklets aim to give, in an interesting and personal way, a factual description to the primary school child of the lives and homes of children in China and Russia. They both cover a wide variety of social types and backgrounds. As such they fill a useful purpose. In so much that is accurate it is a pity to see a persimmon described as a "date-like plum" and a map which shows hundreds of miles of railway that have never existed.

N. PARFIT.

TEDDY TELLS YOU. (Price 1s., postage 3d. extra).

CHILDREN—THIS IS YOUR HIGHWAY CODE. (Price 9d., postage 3d. extra.) (Royal Society for the Prevention of Accidents, 1948. Illustrated.)

The child accident graph shows that the peak danger periods remain constant. These are the unwatched and inexperienced toddlers of from three to seven and the youthful cyclists of ten to fourteen. The booklets have been specially written and prepared for these two groups of children. They are illustrated in colour by Emil Weiss.

Teddy Tells You is a charming little book, written in verse by Rose Fyleman and suited to the period of make believe in the life of the child.

Children—This is Your Highway Code consists of clear-cut instruction in simple language for the child pedestrian and young cyclist. Both books have been produced in collaboration with representatives of Local Education Authorities, Teachers' Organisations and the Police. One cannot praise them too highly for their own intrinsic merits and for the soundness of their aim.

P. M. TAYLOR.